Component of Statistics Canada Catalogue no. 82-003-X
Health Reports

Article

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October, 2011

Statistics Canada Statistique Canada

Canada

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Abstract

Background

New immigrants to Canada initially report better health than does the Canadian-born population. With time, this "healthy immigrant effect" appears to diminish. Limited ability to speak English or French has been identified as a possible factor in poor health. This analysis explored the relationship between self-reported official language proficiency and transitions to poor self-reported health.

Data and methods

Statistics Canada's Longitudinal Survey of Immigrants to Canada tracked a sample of the 2001 immigrant cohort for four years (6, 24 and 48 months after arrival). Data from each of the three survey waves were available for 7,716 respondents. Bivariate and multivariate analysis were used to examine associations between official language proficiency and self-reported health, by sex, controlling for selected pre-migration and post-migration factors. The prevalence of poor health among immigrants was compared with rates among the Canadian-born population, based on data from the Canadian Community Health Survey.

Results

Among a representative sample of recent immigrants, the prevalence of poor self-reported health had risen substantially, especially among women, after four years in Canada. Prolonged limited official language proficiency was strongly associated with a transition to poor health among male and female immigrants who had earlier reported good health. Other factors significantly associated with an increase in the prevalence of poor self-reported health differed by sex. Refugee status, self-reported discrimination, and living in Vancouver were significant for men. Age, health care access problems, and limited friendliness of neighbours were significant for women.

Keywords

Health services accessibility, health status, healthy immigrant effect, immigration, longitudinal studies, medical geography

Authors

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When immigrants arrive in Canada, they are typically in better health than their Canadian-born counterparts. However, this "healthy immigrant effect" may gradually diminish.[1,2] The transition to poorer health has been found in general self-reported health,[3,4] mental health status,[5-7] the prevalence of chronic diseases,[8-11] and birth and death outcomes.[12-14] A wide variety of pre- and post-immigration demographic, socio-economic and behavioural factors have been proposed as contributors to this health decline,[15-30] among which is the individual's ability to function in the language of the new country.[31]

Based on previous research about immigrant adjustment,[32-36] this study hypothesized that limited official language proficiency may be associated with immigrants' health. Fully 80% of those who came to Canada between 2001 and 2006 were from non-traditional sources—Asia, South America and Africa.[37] Six months after they arrived, a substantial percentage of new immigrants (37%) reported limited official language proficiency.[31] With data from the Longitudinal Survey of Immigrants to Canada, this analysis examines the relationship between self-reported official language proficiency and transitions to poor self-reported health during the first four years in the country.

Methods

Data sources

Statistics Canada's Longitudinal Survey of Immigrants to Canada (LSIC) is a population-based cohort survey. From the approximately 250,000 immigrants who settled in Canada from October 2000 through September 2001, about 21,000 aged 15 or older were selected for the LSIC using a stratified sampling strategy. Around 12,000 of them responded to Wave 1 of the survey six months after their arrival (a response rate of 61%). Wave 2 was conducted about two years after arrival, and Wave 3, four years after arrival. Waves 2 and 3 had

9,322 and 7,716 respondents, yielding longitudinal response rates of 48% and 40%, respectively. This study is based on the 7,716 respondents for whom data from all three waves were available.

The low longitudinal response rates are largely attributable to the 28% of the Wave 1 sample who were untraceable.[38] Among individuals who were traced, response rates were high (around 80%).[39] Model-based techniques were used to correct for biases due to non-response and sample attrition.[40]

One section of the survey was dedicated to health issues, including general health status and health care access and barriers. Other sections collected data that were used as covariates in this analysis: language skills, employment, social participation, housing, social support, friendliness of neighbours, discrimination, and location of residence.

The LSIC was administered in 15 languages—English, French, Chinese (Mandarin, Cantonese), Punjabi, Farsi/Dari (one language), Arabic, Spanish, Russian, Serbo-Croatian, Urdu, Korean, Tamil, Tagalog, and Gujarati; these languages include approximately 93% of immigrants in Canada.

Based on the method employed in an earlier study,[22] data from the 2000/2001, 2002/2003 and 2005 Canadian Community Health Survey (CCHS) were used to provide comparative information for the Canadian-born population. CCHS respondents were selected to correspond to the aging of the LSIC cohort: 15 or older for the first wave of the LSIC in 2001; two years later, 17 or older for the second wave; and four years later, 19 or older for the third wave.

Data analysis

Bivariate statistics were used to profile changes in self-reported health among immigrants 6, 24 and 48 months after they arrived, by selected characteristics. The direct age-standardization method, based on the LSIC population structure, was used to compare prevalence rates of poor health with rates among the Canadian-born population. This standardization adjusts for the relatively young age distribution of recent immigrants.

With logistic regressions, the association between changes in self-reported official language proficiency and a transition to poor self-reported health in Wave 3 among immigrants reporting good health in Waves 1 and 2 was explored, controlling for potentially confounding pre- and post-migration factors. SAS software was used with SAS-callable SUDAAN procedures to incorporate bootstrap weights that account for the survey's complex sampling design. The analysis was conducted separately for men and women.[15,23,24]

Definitions and rationales for inclusion

Self-reported health and language proficiency are the key variables in this analysis. Self-reported health is correlated with morbidity, mortality and the use of health services.[41-44] Respondents were asked to rate their health; their responses were dichotomized as good (excellent, very good, good) and poor (fair or poor).

The LSIC language questions focused on proficiency speaking official languages (English and French). For this analysis, the six possible proficiency categories were dichotomized as good (well, very well, first language) and limited (cannot speak, speak poorly, fairly well).[31,36] Both English and French were used to determine language proficiency in Quebec; English was used to determine proficiency elsewhere.[36]

A variable indicating change in official language proficiency was constructed from Wave 1 and 2 data:

- persistently good if the respondent was proficient in both Waves;
- gaining if the respondent was not proficient in Wave 1, but proficient in Wave 2;
- losing if the respondent was proficient in Wave 1, but not in Wave 2; and
- persistently limited if the respondent was not proficient in either Wave.

The covariates examined in the relationship between official language proficiency and self-reported health were grouped under pre-migration (Wave 1) and post-migration risk factors (Waves 1 to 3).

Pre-migration factors were living standard of the country of origin, immigration class, education at entry, and visible minority status. The Gross Domestic Product (GDP) per capita in the country of origin, adjusted for purchasing power parity[45] to correct for socio-economic differentials that may influence perceptions of health, was used to indicate living standard in the country of origin. Countries were ranked by their GDP level.

Immigration class refers to: refugees (who usually come for humanitarian reasons); family class (who are usually sponsored by Canadian citizens for family reunification); and economic/business class including family members (who usually come to participate in the labour force or to set up a business). Provincial nominees and those who could not be classified (n=43) were excluded.

Visible minority status was determined based on Wave 1 self-reported visible minority status, which includes groups such as Chinese, South Asian, Filipino, Black, etc.

Post-migration factors from Wave 2 that may be involved in the association between language proficiency and health[34] were incorporated in the analysis: economic problems, barriers to health care, and social isolation. Job satisfaction (yes, no, not working) and family income (no income, low or high relative to the median, and missing) were used as a proxy for economic problems. A report of health care access problems (yes, no) was used as a proxy for barriers to health care. Participation in social organizations (yes, no) was used as a proxy for social isolation.

Other post-migration factors drawn from Wave 3 (48 months after arrival) reflect health risk factors related to the needs of new immigrants:

- adequate housing[28]—satisfaction with housing (yes, no) as a proxy;

- social support[18,22,46]—number of people to confide in (none, 1 to 4, 5 or more) as a proxy;
- welcoming communities[29]—friendliness of neighbours (yes, neutral, no) and self-reported discrimination (no, rarely, some/most or all the time) as proxies; and
- importance of place[30]—residing in selected Census Metropolitan Areas (Toronto, Montreal, Vancouver, Edmonton/Calgary) or not.

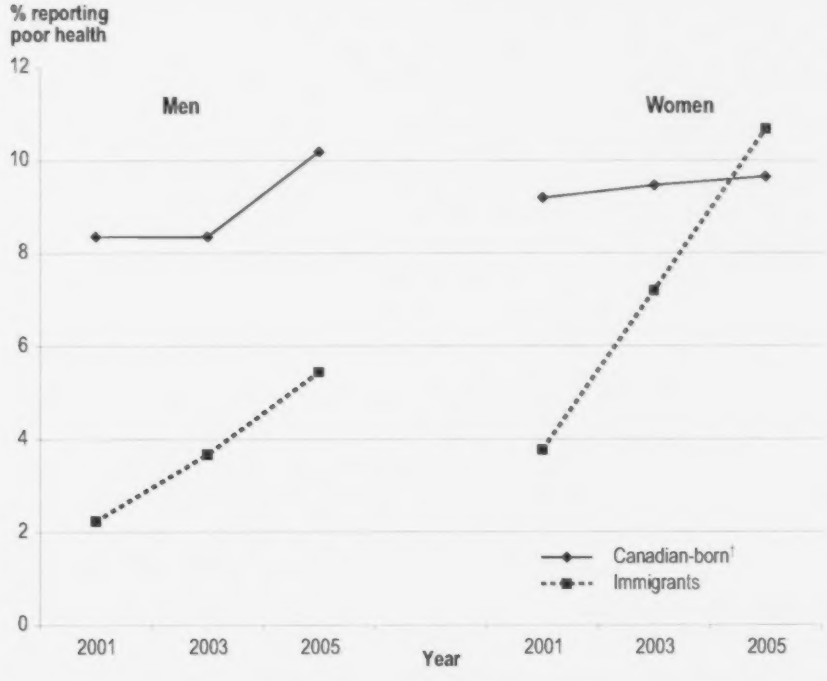
Results

Immigrants to Canada generally arrive in good health. An estimated 2% of men and 4% of women in the 2000/2001 immigrant-landing cohort reported poor health six months after they arrived (Figure 1). The corresponding age-standardized prevalence rates of poor health among the Canadian-born were estimated to be 8% for men and 10% for women. Four years later, an estimated 5% of male and 11% of female members of the immigrant-landing cohort reported poor health, compared with 10% of both sexes in the 2005 Canadian-born population of the same age.

Language proficiency

The self-rated official language (English or French) proficiency of 66% of male and 52% of female immigrants was good six months after they arrived and remained so over the next two years (Table 1). As well, during those two years, the language proficiency of 14% of men and 16% of women improved from limited to good. However, for 15% of men and 27% of women, official language proficiency remained limited, and for 5% of each sex, it declined from good to limited.

Figure 1
Prevalence of poor self-reported health, immigrants aged 15 or older in 2000/2001 and Canadian-born population, by sex, Canada, 2001 to 2005



† age-standardized to Longitudinal Survey of Immigrants to Canada population
Source: Longitudinal Survey of Immigrants to Canada, Waves 1, 2 and 3, 2000/2001, 2002/2003 and 2005 Canadian Community Health Surveys.

Table 1
Percentage distribution of selected characteristics, by sex, immigrants aged 15 or older in 2000/2001, Waves 1 to 3, Longitudinal Survey of Immigrants to Canada, 2001 to 2005

Characteristics	Men	Women
Sample size (number)	3,761	3,872
Estimated total	76,623	79,027
Percent (%)	100	100
Age group (Wave 1)		
15 to 24	11	10
25 to 44	64	67
45 or older	25	23
Language proficiency (Wave 1 to Wave 2)		
Persistently good	66	52
Gaining	14	16
Losing	5	5
Persistently poor	15	27
GDP per capita in country of origin (Wave 1)		
L1 (lowest)	6	6
L2	61	63
L3	19	19
L4 (highest)	13	13
Immigration class (Wave 1)		
Refugee	6	6
Family	21	34
Skilled workers (including business class)	73	60
Visible minority status (Wave 1)		
Yes	79	80
No	21	20
Education at entry (Wave 1)		
Less than secondary graduation	12	16
Secondary graduation	10	14
Some postsecondary	17	22
University graduation	39	33
Master's or more	22	14
Family income (Wave 2)		
No income	16	17
Low income	42	41
High income	39	38
Missing	3	4
Health care access problem (Wave 2)		
No	86	83
Yes	14	17
Job satisfaction (Wave 2)		
Not working	30	52
No	11	7
Yes	59	41
Social participation (Wave 2)		
No	30	26
Yes	70	74
Housing satisfaction (Wave 3)		
No/Don't know/Refused	10	12
Yes	90	88
Social support (Wave 3)		
No	7	6
Some	73	74
Lots	20	20
Friendliness of neighbours (Wave 3)		
No	2	3
Neutral	25	24
Yes	72	73
Perceived discrimination (Wave 3)		
No	69	74
Rarely	11	9
Often/Always	20	17
Residence (Wave 3)		
Toronto	42	43
Vancouver	14	16
Montreal	14	13
Calgary/Edmonton	9	8
Other	21	21

Source: Longitudinal Survey of Immigrants to Canada, Waves 1, 2 and 3

Table 2
Prevalence of poor self-reported health, by sex and length of time since arrival, immigrants aged 15 or older in 2000/2001, Waves 1 to 3, Longitudinal Survey of Immigrants to Canada, 2001 to 2005

	Men								Women							
	Six months			Two years			Four years		Six months			Two years			Four years	
		95% confidence interval			95% confidence interval			95% confidence interval		95% confidence interval			95% confidence interval			95% confidence interval
Characteristics	%	from	to	%	from	to	%	from	to	%	from	to	%	from	to	%	from	to
Total	2.2	1.8	2.8	3.7	3.1	4.4	5.4	4.7	6.3	3.8	3.2	4.4	7.2	6.4	8.1	10.7	9.7	11.7
Age group (Wave 1)																		
15 to 24	2.6[E]	1.4	4.9	3.2[E]	1.8	5.6	3.0[E]	1.8	5.1	2.3[E]	1.2	4.4	3.5[E]	2.0	6.0	2.8[E]	1.7	5.0
25 to 44	1.7[E]	1.2	2.3	2.1	1.6	2.8	4.4	3.6	5.4	2.1	1.6	2.7	5.2	4.4	6.2	8.3	7.2	9.6
45 or older	3.5[E]	2.4	5.1	7.7	6.0	9.9	9.2	7.4	11.3	9.1	7.3	11.4	14.5	12.1	17.1	20.7	18.1	24.0
Language proficiency (Wave 1 to Wave 2)																		
Persistently good/w	1.6[E]	1.1	2.3	2.7	2.1	3.5	4.0	3.3	5.0	1.7[E]	1.1	2.4	4.1	3.2	5.2	6.5	5.4	7.8
Gaining	F	F	F	1.9[E]	1.0	3.5	4.6[E]	3.1	6.5	3.2[E]	2.1	5.0	4.4[E]	2.9	6.5	6.6	4.8	9.1
Losing	F	F	F	F	F	F	6.4[E]	3.4	11.6	F	F	F	7.1[E]	4.1	12.0	9.7[E]	6.0	15.4
Persistently poor	5.4[E]	3.7	7.8	9.2	6.9	12.1	12.4	9.8	15.6	8.4	6.9	10.3	14.9	12.7	17.3	21.2	18.8	23.7
GDP per capita in country of origin (Wave 1)																		
L1 (lowest)	F	F	F	5.1[E]	3.1	8.2	5.6[E]	3.6	8.6	5.5[E]	3.4	8.8	8.5[E]	5.4	13.1	10.2[E]	7.0	14.7
L2	2.6	1.9	3.4	4.1	3.3	5.1	6.0	5.0	7.2	3.8	3.1	4.7	8.6	7.4	9.8	12.7	11.3	14.1
L3	1.7[E]	1.0	3.0	2.5[E]	1.6	4.1	3.8[E]	2.7	5.4	3.6[E]	2.4	5.5	5.4[E]	3.9	7.5	7.1	5.4	9.3
L4 (highest)	F	F	F	2.8[E]	1.6	4.8	5.2[E]	3.4	7.7	3.0[E]	1.8	4.9	2.7[E]	1.6	4.6	6.4[E]	4.5	9.0
Immigration class (Wave 1)																		
Refugee	4.0[E]	2.6	6.2	5.7	4.1	7.9	9.7	7.4	12.8	8.4	6.0	11.5	9.6	7.4	12.3	15.5	12.5	19.2
Family	3.6[E]	2.4	5.4	7.1	5.3	9.4	7.5	5.7	9.8	5.3	4.1	6.8	9.2	7.6	11.0	13.4	11.6	15.5
Skilled workers (including business class)	1.7[E]	1.2	2.4	2.5	1.9	3.3	4.5	3.7	5.4	2.4	1.9	3.2	5.9	4.9	7.0	8.6	7.5	9.9
Visible minority status (Wave 1)																		
Yes	2.2	1.7	2.9	3.8	3.1	4.6	5.7	4.9	6.6	3.8	3.2	4.5	7.7	6.7	8.8	11.7	10.6	13.0
No	2.2[E]	1.4	3.4	3.2[E]	2.2	4.7	4.5[E]	3.2	6.2	3.7[E]	2.5	5.4	5.2	3.8	7.1	6.5	4.9	8.6
Education at entry (Wave 1)																		
Less than secondary graduation	3.4[E]	2.1	5.6	6.2[E]	4.3	8.9	7.1	5.2	9.7	8.8	6.8	11.3	11.5	9.2	14.3	16.0	13.4	19.2
Secondary graduation	3.0[E]	1.7	5.1	4.5[E]	2.7	7.5	7.3[E]	5.0	10.4	2.4[E]	1.4	4.1	8.3	6.2	11.0	14.1	11.2	17.5
Some postsecondary	2.9[E]	1.9	4.6	5.7[E]	4.0	8.1	5.2[E]	3.7	7.5	3.8[E]	2.7	5.4	5.9	4.5	7.9	9.5	7.6	11.8
University graduation	1.8[E]	1.2	2.8	2.4[E]	1.7	3.5	5.4	4.2	6.9	2.4[E]	1.6	3.5	5.1	3.9	6.7	8.6	7.1	10.4
Master's or more	1.4[E]	0.7	2.8	2.6[E]	1.7	3.9	3.9[E]	2.7	5.6	2.5[E]	1.3	4.5	8.0[E]	5.8	11.1	7.7[E]	5.5	10.6
Family income (Wave 2)																		
No income	3.5[E]	2.3	5.4	5.5[E]	3.9	7.8	6.8	5.1	9.1	5.8	4.3	7.8	8.2	6.4	10.6	10.6	8.5	13.3
Low income	2.5[E]	1.8	3.5	3.6	2.7	4.7	6.3	5.1	7.6	4.0	3.1	5.1	8.4	7.0	10.0	12.4	10.7	14.3
High income	1.4[E]	0.9	2.2	2.9	2.1	4.0	3.9	2.9	5.1	2.8[E]	2.0	3.8	5.6	4.4	7.0	8.8	7.3	10.5
Missing	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	11.6[E]	7.0	18.7
Health care access problem (Wave 2)																		
No	2.1	1.7	2.7	3.2	2.6	3.9	5.2	4.4	6.0	3.4	2.8	4.2	5.7	4.9	6.6	9.2	8.2	10.3
Yes	2.9[E]	1.6	5.1	6.6[E]	4.5	9.5	7.2	5.1	10.1	5.4[E]	3.8	7.5	14.5	11.8	17.7	18.1	15.1	21.5
Job satisfaction (Wave 2)																		
Not working	3.7	2.7	5.1	6.5	5.1	8.3	7.5	6.0	9.2	5.5	4.5	6.6	9.5	8.2	10.9	13.0	11.6	14.6
No	F	F	F	4.7[E]	2.8	7.7	7.4[E]	5.1	10.7	F	F	F	8.6[E]	5.6	13.1	13.4[E]	9.4	18.6
Yes	1.6[E]	1.2	2.3	2.0	1.5	2.7	4.0	3.2	5.0	1.9[E]	1.3	2.7	4.1	3.1	5.3	7.2	6.0	8.7
Social participation (Wave 2)																		
No	2.0[E]	1.3	3.2	3.4[E]	2.4	4.9	5.2	3.9	6.9	3.4[E]	2.4	4.9	6.8	5.4	8.7	8.7	7.1	10.7
Yes	2.3	1.8	3.0	3.8	3.1	4.6	5.5	4.7	6.5	3.9	3.2	4.7	7.3	6.4	8.4	11.3	10.2	12.6
Housing satisfaction (Wave 3)																		
No/Don't know/Refused	3.2[E]	1.8	5.6	5.3[E]	3.3	8.5	8.9[E]	6.4	12.3	4.9	3.3	7.3	12.0	9.1	15.8	17.1	13.8	21.0
Yes	2.1	1.7	2.7	3.5	2.9	4.2	5.0	4.3	5.9	3.6	3.0	4.3	6.5	5.7	7.5	9.8	8.8	10.9
Social support (Wave 3)																		
No	F	F	F	4.8[E]	2.6	8.5	9.5[E]	6.3	14.1	5.1[E]	3.1	8.5	8.2[E]	5.5	12.6	16.0	11.7	21.5
Some	2.3	1.8	3.1	3.6	2.9	4.4	5.2	4.4	6.1	3.7	3.1	4.6	7.3	6.3	8.3	10.8	9.7	12.0
Lots	F	F	F	3.6[E]	2.4	5.5	4.9[E]	3.5	6.9	3.4[E]	2.3	5.1	6.7	4.9	9.0	8.6	6.7	11.0
Friendliness of neighbours (Wave 3)																		
No	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	13.4[E]	8.2	21.0
Neutral	2.8[E]	1.8	4.2	4.0[E]	2.8	5.6	7.5	5.9	9.5	4.6	3.4	6.2	10.0	8.1	12.4	13.5	11.2	16.1
Yes	2.0	1.6	2.7	3.4	2.7	4.1	4.7	3.9	5.7	3.5	2.9	4.3	6.3	5.4	7.3	9.6	8.6	10.9
Perceived discrimination (Wave 3)																		
No	2.4	1.9	3.2	3.8	3.1	4.7	4.6	3.8	5.5	4.0	3.3	4.8	6.7	5.8	7.7	10.3	9.2	11.5
Rarely	F	F	F	F	F	F	5.1[E]	3.1	8.2	2.7[E]	1.4	5.0	7.2[E]	4.8	10.8	11.3	8.1	15.4
Often/Always	1.9[E]	1.1	3.4	4.0[E]	2.8	5.8	8.5	6.6	10.9	3.6[E]	2.3	5.5	9.5	7.2	12.4	11.9	9.4	14.9
Residence (Wave 3)																		
Toronto	2.1[E]	1.4	3.1	4.6	3.5	5.9	4.9	3.9	6.2	3.1	2.3	4.2	7.2	5.9	8.7	10.6	9.1	12.4
Vancouver	2.5[E]	1.5	4.2	5.0[E]	3.3	7.4	9.2	6.9	12.2	5.7	4.2	7.6	9.8	7.7	12.4	16.7	14.0	19.8
Montreal	2.6[E]	1.4	4.7	2.7[E]	1.5	4.8	4.4[E]	2.8	6.8	4.7[E]	3.1	7.1	5.9[E]	3.9	8.8	9.2	6.7	12.4
Calgary/Edmonton	F	F	F	2.3[E]	1.3	4.1	5.2	3.4	8.0	3.8[E]	2.2	6.5	7.3[E]	5.0	10.5	8.9	6.4	12.1
Other	2.0[E]	1.2	3.2	2.1[E]	1.4	3.3	4.8[E]	3.5	6.6	3.0[E]	2.1	4.4	6.1	4.6	8.0	7.8	6.1	9.8

[E] use with caution
F too unreliable to be published
Source: Longitudinal Survey of Immigrants to Canada, Waves 1, 2 and 3

Trends by pre- and post-migration factors

During immigrants' first four years in Canada, the prevalence of poor self-reported health rose among those with persistently limited language proficiency: from 5% to 12% for men, and from 8% to 21% for women. The increase was less among those with persistently good language proficiency: from 2% to 4% among men, and from 2% to 7% among women (Table 2).

Of course, the rising prevalence of poor self-reported health among new immigrants was associated with many factors besides language. The extent of the increase varied by pre- and post-immigration characteristics.

For example, among immigrants aged 45 or older in 2000/2001, the percentage reporting poor health rose over the next four years from 4% to 9% for men, and from 9% to 21% for women. By contrast, among those aged 15 to 24 in 2000/2001, the percentage reporting poor health hovered around 2% or 3% throughout the period.

Over the four years, the prevalence of poor self-reported health among immigrants who reported difficulties accessing health care rose from 5% to 18% for women and from 3% to 7% for men. Rates were lower among those who did not report access difficulties, rising from 3% to 9% for women and from 2% to 5% for men.

Several other factors were associated with a high prevalence of poor self-reported health after four years in Canada. By 2005, the prevalence of poor health was at least 10% for men and 15% for women who arrived as refugees or lacked social support. The percentage was also at least 15% for women who had relatively low education; had housing that was not satisfactory; or lived in Vancouver.

Multivariate results

To understand factors related to a health decline the following analysis focuses on the 95% of male and 91% of female immigrants who reported good health in both 2000/2001 and 2003. By 2005, 4% of these men and 7% of these women experienced a health decline, in that they reported their health to be poor.

For both sexes, language proficiency was related to the likelihood of declining health: the age-adjusted odds that immigrants with persistently limited proficiency would report poor health in 2005 were close to three times the odds for immigrants whose language abilities were persistently good (Table 3). However, a number of other pre- and post-migration factors were associated with a health decline. For example, the age-adjusted odds were high for immigrants who were older, who had arrived as refugees, who were not working, who were not satisfied with their housing, and who lived in Vancouver. As well, the factors that were important differed for men and women. Many of these factors were interrelated. To help account for the possibility of confounding, and determine which variables, including language skills, were independently associated with a reported health decline, multivariate analysis was used. All independent variables were tested for multicollinearity and none was found.

When all the selected pre- and post-migration factors were considered simultaneously, relatively few of them remained significantly related to a transition to poor self-reported health. Persistently limited official language proficiency, however, was among them, and it was the only factor that was estimated to be significant for both sexes. Among immigrant men and women with persistently limited proficiency, the odds of a health decline were estimated to be at least double the odds for their counterparts whose language abilities were persistently good. As well, those who gained language skills had estimated odds of a health decline similar to those of immigrants who were persistently proficient.

For men, the other factors that remained significantly associated with a reported health decline were having come to Canada as a refugee, reporting frequent exposure to discrimination, and living in Vancouver. For women, the other significant factors were older age, having health care access problems, and a perception that neighbours' friendliness was limited.

What is already known on this subject?

- In cross-sectional analyses, limited official language proficiency—the inability to speak English or French—has been associated with the reporting of poor health among recent immigrants.

What does this study add?

- This is the first longitudinal Canadian study to examine the role of persistent limited language proficiency on immigrant health.
- For both sexes, persistently limited proficiency in English or French among recent immigrants was strongly associated with an increase in the prevalence of poor self-reported health.
- Those who reported gaining language proficiency had a health outcome similar to those reporting persistently good proficiency.
- Other factors associated with an increase in the prevalence of poor self-reported health differed by sex: refugee status, self-reported discrimination, and living in Vancouver were significant for men; older age, reported health care access problems, and limited friendliness of neighbours were significant for women.

Discussion

Even when pre- and post-immigration risk factors were taken into account, persistently limited official language proficiency remained significantly associated with a reported health decline among both men and

Table 3
Age-adjusted and fully adjusted odds ratios relating selected characteristics to poor self-reported health in Wave 3, by sex, recent immigrants who reported good health in Waves 1 and 2, Canada, Longitudinal Survey of Immigrants to Canada, 2001 to 2005

	Men						Women					
	Age-adjusted odds ratio	95% confidence interval		Fully adjusted odds ratio	95% confidence interval		Age-adjusted odds ratio	95% confidence interval		Fully adjusted odds ratio	95% confidence interval	
Characteristics		from	to		from	to		from	to		from	to
Age (Wave 3)												
15 to 24†	1.00	..	..	1.00	..	..	1.00	..	..	1.00	..	..
25 to 44	1.78*	0.78	4.09	1.54	0.61	3.90	5.60*	2.16	14.53	5.46*	2.01	14.81
45 or older	3.07*	1.34	7.04	2.41	0.97	5.99	13.06*	5.05	33.78	12.09*	4.49	32.55
Language proficiency (Wave 1 to Wave 2)												
Persistently good†	1.00	..	..	1.00	..	..	1.00	..	..	1.00	..	..
Gaining	1.38	0.83	2.3	1.21	0.68	2.17	1.10	0.68	1.76	0.94	0.57	1.55
Losing	1.75	0.67	4.56	1.52	0.56	4.15	1.23	0.55	2.76	1.08	0.48	2.42
Persistently poor	2.82*	1.83	4.34	2.44*	1.46	4.08	2.93*	2.17	3.95	2.02*	1.35	3.02
GDP per capita in country of origin (Wave 1)												
L1 (lowest)	1.28	0.59	2.76	0.64	0.25	1.64	1.65	0.79	3.44	0.99	0.40	2.43
L2	1.17	0.67	2.04	0.91	0.49	1.70	2.10*	1.27	3.48	1.38	0.79	2.41
L3	0.85	0.43	1.67	0.79	0.38	1.62	1.34	0.74	2.43	1.20	0.66	2.19
L4 (highest)†	1.00	..	..	1.00	..	..	1.00	..	..	1.00	..	..
Immigration class (Wave 1)												
Refugee	2.30*	1.42	3.74	2.36*	1.13	4.91	1.96*	1.27	3.03	1.66	0.91	3.02
Family	1.22	0.77	1.93	1.21	0.65	2.24	1.47*	1.09	1.97	1.27	0.87	1.83
Skilled workers (including business class)†	1.00	..	..	1.00	..	..	1.00	..	..	1.00	..	..
Visible minority (Wave 1)												
Yes	1.58	0.93	2.67	1.15	0.60	2.21	2.15*	1.36	3.40	1.40	0.80	2.43
No†	1.00	..	..	1.00	..	..	1.00	..	..	1.00	..	..
Education at entry (Wave 1)												
Less than secondary graduation	1.76	0.85	3.65	1.01	0.40	2.55	2.28*	1.28	4.08	1.18	0.55	2.53
Secondary graduation	1.73	0.86	3.45	1.22	0.51	2.88	2.49*	1.37	4.52	1.76	0.88	3.52
Some postsecondary	1.16	0.58	2.33	0.96	0.45	2.04	1.61	0.92	2.81	1.36	0.74	2.50
University graduation	1.49	0.84	2.65	1.34	0.73	2.45	1.42	0.82	2.43	1.37	0.77	2.43
Master's or more†	1.00	..	..	1.00	..	..	1.00	..	..	1.00	..	..
Family income (Wave 2)												
No income	1.64	0.97	2.78	1.43	0.76	2.69	0.97	0.63	1.49	0.83	0.52	1.33
Low income	1.66*	1.07	2.56	1.29	0.81	2.05	1.29	0.93	1.79	1.07	0.75	1.54
High income†	1.00	..	..	1.00	..	..	1.00	..	..	1.00	..	..
Missing	1.24	0.41	3.72	1.19	0.39	3.65	0.99	0.44	2.24	0.91	0.39	2.12
Health care access problem (Wave 2)												
No†	1.00	..	..	1.00	..	..	1.00	..	..	1.00	..	..
Yes	1.33	0.81	2.19	1.20	0.71	2.02	1.93*	1.38	2.72	2.10*	1.44	3.07
Job satisfaction (Wave 2)												
Not working	1.49*	1.11	2.01	0.91	0.58	1.42	1.49*	1.11	2.01	1.24	0.89	1.72
No	1.54	0.87	2.74	1.36	0.75	2.45	1.54	0.87	2.74	1.24	0.67	2.29
Yes	1.00	..	..	1.00	..	..	1.00	..	..	1.00	..	..
Social participation (Wave 2)												
No	0.94	0.63	1.41	0.88	0.57	1.37	1.40	1.00	1.96	1.16	0.81	1.67
Yes†	1.00	..	..	1.00	..	..	1.00	..	..	1.00	..	..
Housing satisfaction (Wave 3)												
No	1.66*	1.01	2.73	1.26	0.73	2.17	1.64*	1.11	2.42	1.42	0.92	2.18
Yes†	1.00	..	..	1.00	..	..	1.00	..	..	1.00	..	..
Social support (Wave 3)												
No	1.52	0.74	3.12	1.33	0.60	2.95	2.16*	1.14	4.11	1.76	0.90	3.44
Some	1.00	0.62	1.61	1.00	0.60	1.66	1.58*	1.05	2.36	1.50	0.99	2.29
A great deal†	1.00	..	..	1.00	..	..	1.00	..	..	1.00	..	..
Friendliness of neighbours (Wave 3)												
No	1.05	0.19	5.90	1.04	0.18	6.10	1.48	0.71	3.09	1.58	0.73	3.44
Neutral	1.51*	1.01	2.25	1.27	0.84	2.01	1.53*	1.12	2.09	1.43*	1.02	2.00
Yes†	1.00	..	..	1.00	..	..	1.00	..	..	1.00	..	..
Perceived discrimination (Wave 3)												
No†	1.00	..	..	1.00	..	..	1.00	..	..	1.00	..	..
Rarely	1.86*	1.03	3.36	1.86	0.98	3.53	1.42	0.88	2.29	1.43	0.84	2.41
Often/Always	2.61*	1.74	3.90	2.50*	1.60	3.90	1.13	0.78	1.65	1.11	0.73	1.68
Residence (Wave 3)												
Toronto†	1.00	..	..	1.00	..	..	1.00	..	..	1.00	..	..
Vancouver	2.25*	1.35	3.76	1.95*	1.14	3.31	1.50*	1.06	2.13	1.41	0.96	2.07
Montreal	1.31	0.71	2.43	1.52	0.80	2.88	0.90	0.55	1.22	0.94	0.55	1.58
Calgary/Edmonton	1.15	0.59	2.23	1.11	0.54	2.29	0.75	0.46	1.22	0.82	0.48	1.38
Others	1.23	0.74	2.02	1.26	0.72	2.18	0.71	0.48	1.06	0.85	0.56	1.28

† reference category
* significantly different from reference category ($p<0.05$)
.. not applicable
Source: Longitudinal Survey of Immigrants to Canada, Waves 1, 2 and 3.

women. This result is consistent with an earlier study based on the LSIC,[22] which found English language proficiency to be important in the maintenance of good health. As well, a study[47] based on the CCHS reported that limited language proficiency in a linguistic minority situation was associated with poorer self-reported health, and that the impact was greater for men, similar to the results shown here.

By contrast, another recent LSIC study[27] that documented a loss in self-reported health among new immigrants did not find a statistical association with language proficiency. However, that analysis used English or French spoken at home as a proxy for language proficiency, whereas the current analysis used the self-reported ability to converse in either official language. Many new immigrants came from countries where English or French may be spoken, but not at home. Consequently, the language spoken at home may not be an ideal proxy.

Language proficiency is part of a constellation of issues that can shape immigrant health. Limited language proficiency could influence health by: 1) impairing access to health services; 2) creating economic difficulties; and 3) reducing social participation.[34] While women frequently cite language limitations as a barrier to health services,[48] in the present analysis, even when language proficiency was taken into account, health care access problems remained associated with a reported health decline. By contrast, the association between employment and a reported health decline disappeard in the multivariate analysis. For women, low social support was associated with poor health in the bivariate analysis, but not when the other variables were considered. And although other research has related poor health to lower levels of social capital,[22] defined in the present study as social participation, was not associated with a transition to poor self-reported health.

Beyond language abilities, immigrant men in Vancouver had relatively higher odds of a health decline, similar to previous LSIC studies.[22,27] Future analyses of LSIC data might consider the population composition of communities in order to understand the contextual effect.

Having arrived as a refugee and perceiving discrimination were both significant risk factors for men. Male refugees often may face a greater loss of social status than do female refugees, which could be associated with their greater health decline.[49,50] As well, links between discrimination and health are well documented.[20,51-53]

Self-reported language proficiency changed over time: improvements and declines were both noted. Declines may have been related to inflated initial reports. They could also result from social alienation, or a change in the reference point from standards of proficiency in the country of origin to those in Canada. For women, care-giving responsibilities could impede participation in language training.[54]

Limitations

The LSIC has several notable limitations. Language proficiency and health status, the two major variables in the analysis, were self-reported; neither was objectively and consistently measured. For language, the results depend not only on immigrants' actual ability to speak, but also on their perception of their ability, which can differ from one individual to another and change over time. As well, the survey did not collect data about health behaviours (for example, smoking, physical activity) that might have influenced changes in self-reported health. Finally, although sample weights were used to adjust for attrition, the longitudinal response rates were relatively low.

Conclusion

Persistently limited language proficiency was found to be associated with a decline in self-reported health among male and female immigrants during their first four years in Canada. Those who gained language proficiency were found to have a health outcome similar to those with persistently good language proficiency. This suggests that the benefits of acquiring official language skills may not only be social and economic, but may also be associated with the maintenance of health. ■

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